Arduino Pomodoro Timer

This Arduino program is designed to manage a Pomodoro-style timer with study sessions, short breaks, and a long break. It uses an LCD, an LED, and a buzzer to provide visual and auditory feedback.

Include Libraries

The `Wire.h` library is used for I2C communication, and the `LiquidCrystal_I2C.h` library controls the LCD.

Global Variables and Constants

- **LCD**: Initializes the LCD with the I2C address `0x27` and a 16x2 display.
- **Time Variables**: `minutes` and `seconds` are used to track time.
- **Constants**: `studytime`, `breaktime`, `longbreak`, and `repeat` define the durations and repetitions.
- **Pins**: `buzzer`, `switch`, `gled`, and `bled` are defined for the buzzer, button, green LED, and blue LED, respectively.

Setup Function

- **LCD Initialization**: **`lcd.init()`** and **`lcd.begin(16, 2)`** initialize the LCD, and **`lcd.backlight()`** turns on the backlight.
- **Pin Modes**: Sets the buzzer, green and blue LED as an output, and the switch as an input with an internal pull-up resistor.

Main Loop

- **Idle State**: The blue LED (`bled`) is on, and the LCD prompts the user to press the button.

- **Button Press**: When the button is pressed (`switchval == LOW`), the LCD is cleared, a tone is played, and the blue LED blinks (`bledblnk()`).
- **Pomodoro Cycle**: The `repeat` loop runs the study sessions and short breaks. After `repeat` study sessions and short breaks, a long break is initiated.
- **Auditory Feedback**: `finaltone()` plays a series of tones at the end of each session.

Tone Functions

- **tone()**: Plays a single short tone.
- **finaltone()**: Plays a sequence of 8 short tones, with the blue LED blinking in sync.

Study, Break, and Long Break Functions

These functions manage the display and timing for the study session, short and long breaks.

“studytimefun()”:

- **Setup**: Turns on the green LED (`gled`), clears the LCD, and displays "Study Time!".
- **Timing Loop**: Counts minutes and seconds, updating the LCD each second.
- **Completion**: Turns off the green LED.

“breaktimefun() and longbreakfun()”:

These functions are similar to `studytimefun()`, with different durations and display messages.

Blue LED Blink Function

- **`bledblnk()`**: Blinks the blue LED 5 times, then waits for 1 second.

Summary

- **Initialization**: Sets up the LCD, LEDs, buzzer, and button.
- **Idle State**: Displays a prompt to press the button.
- **Button Press**: Initiates the Pomodoro cycle with study sessions, breaks, and a long break.
- **Timing Functions**: Use nested loops to count time and update the display.
- **Feedback**: Provides visual and auditory feedback using LEDs and the buzzer.

This program effectively manages study sessions and breaks with clear visual and auditory cues, providing a structured and interactive timing mechanism.

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